

REMARKS

In the Final Office Action dated April 5, 2001, the Examiner allowed claims 3 and 5; objected to claim 7; rejected claim 18 under 35 U.S.C. § 112, 2nd paragraph; and rejected claims 2, 4, 8, 9, 13-16, 19-26, and 28-35 under 35 U.S.C. § 103(a) as being unpatentable over over Crane et al., U.S. Patent No. 6,054,991 ('Crane') in view of Blahut et al., U.S. Patent No. 5,463,728 ('Blahut') and further in view of Harrison et al., "Transparent Layered User Interfaces: an Evaluation of a Display Design to Enhance Focused and Divided Attention" ('Harrison'). By this amendment, Applicant proposes to cancel claim 18, without prejudice or disclaimer, and proposes to amend claims 2, 7-9, 13, 25 and 28-35. Upon entry of these amendments, claims 2-5, 7-9, 13-16, 19-26 and 28-35 will remain pending.

Request for Acknowledgement of Information Disclosure Statement Filed

December 1, 1998

On April 18, 2001, Applicant submitted a letter requesting acknowledgment of an Information Disclosure Statement (IDS) previously filed on December 1, 1998. As noted in the letter, the Examiner is respectfully requested to send a duplicate copy of the form PTO-1449 initialed, signed and dated, which both acknowledges receipt of the IDS and the Information Disclosure Citation, and indicates that the reference was considered by the Examiner.

Objection to Information Disclosure Statement Filed October 24, 2000

In the Final Office Action, the Examiner indicated that the IDS filed October 24, 2000, failed to comply with the requirements of 37 C.F.R. § 1.97 and M.P.E.P. § 609. In particular, the Examiner did not consider the submitted reference due to an apparent mismatch between the IDS filed October 24, 2000 and an IDS filed July 9, 1997. Both

IDS's apparently list document H06-215150 as the enclosed document for consideration.

In the IDS filed October 24, 2000, Applicant submitted a document HEI6-290254, but inadvertently cited the document as H06-215150. Filed herewith is a corrected form PTO-1449 enclosing the same document HEI6-290254 previously submitted in the IDS filed October 24, 2000. The Examiner is respectfully requested to send a duplicate copy of the corrected form PTO-1449 initialed, signed and dated, which both acknowledges receipt and indicates that the reference HEI6-290254 was considered by the Examiner.

Allowable Subject Matter

In the Final Office Action, the Examiner allowed claims 3 and 5. Applicant thanks the Examiner for allowing these claims. In addition, the Examiner indicated that claim that claim 7 would be allowable if rewritten in independent form. By this Amendment, claim 7 is rewritten in independent form and includes subject matter which the Examiner admitted is allowable. Accordingly, Applicant respectfully submits that claim 7 is allowable.

Rejection of claim 18

In the Final Office Action, the Examiner rejected claim 18 under 35 U.S.C. § 112, 2nd paragraph for having an improper dependency. By this Amendment, Applicant cancels claim 18, without prejudice or disclaimer. Therefore, the rejection is moot.



Rejection of claims 2, 4, 8, 9, 13-16, 19-26 and 28-35

In the Final Office Action, the Examiner rejected claims 2, 4, 8, 9, 13-16, 19-26 and 28-35 under 35 U.S.C. § 103, as being unpatentable over Crane in view of Blahut and further in view of Harrison. Applicant respectfully traverses the rejection.

Claims 2, 8-9, 13, 25 and 28-35 are amended herein to include subject matter that the Examiner admitted is allowable (See Office Action dated October 3, 2000, page 4, para. 3). Thus, claims 2, 8-9, 13, 25 and 28-35 are allowable as amended.

Claims 4, 19 and 23 depend from claim 2 and are allowable for at least their dependency on allowable claim 2 as well as their additional recitations. Claim 20 depends from claim 8 and is allowable for at least its dependency on allowable claim 8 as well as its additional recitations. Claim 21 depends from claim 9 and is allowable for at least its dependency on allowable claim 9 as well as its additional recitations. Claims 15, 18, 22 and 24 depend from claim 13 and are allowable for at least their dependency on allowable claim 13 as well as their additional recitations. Claim 26 depends from claim 25 and is allowable for at least its dependency on allowable claim 25 as well as its additional recitations. Accordingly, for at least all of the above reasons, it is respectfully requested that the rejections to claims 2, 4, 8, 9, 13, 15, 19-26 and 28-35 be withdrawn.

CONCLUSION

Applicant respectfully requests that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 2-5, 7-9, 13-16, 19-26 and 28-35 in condition for allowance. Applicant submits that the proposed amendments of claims 2, 7-9, 13, 25 and 28-35 do not raise new issues or necessitate the undertaking of any additional

search of the art by the Examiner, since all of the elements and their relationships claimed were previously admitted as being allowable and either earlier claimed or inherent in the claims as examined. Therefore, this Amendment should allow for immediate action by the Examiner.

It is respectfully submitted that the entering of the Amendment would allow the Applicant to reply to the final rejections and place the application in condition for allowance.

Finally, Applicant submits that the entry of the amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.

Attached hereto is a marked-up version of the changes made to claims 1-9 by this amendment. The attached page is captioned "Version with markings to show changes made." Deletions appear as normal text surrounded by [] and additions appear as underlined text.

In view of the foregoing remarks, Applicant submits that the claimed invention, as amended, is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicant therefore requests the entry of this Amendment, the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

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Respectfully submitted,

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Dated: July 3, 2001

By:


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VERSION WITH MARKINGS TO SHOW CHANGES MADEIN THE CLAIMS:

Please cancel claim 18, without prejudice or disclaimer, and amend claims 2, 7-9, 13, 25 and 28-35 as follows:

2. (Four Times Amended) A virtual image generation apparatus which generates images observed from a viewpoint to be displayed on a monitor, the images including an operator-controlled object moving relative to virtual terrain objects, the operator-controlled object and the terrain objects being defined within a three-dimensional virtual space, the virtual generation apparatus comprising:

shape data memory which stores shape data defining shapes of the terrain objects present in the virtual space;

position specification means which specifies position of the operator-controlled object with respect to the terrain objects;

overlap determination means which determines, on the basis of the shape data and the position data, whether or not a terrain object is located between the viewpoint and the operator-controlled object; and

image generation means which generates image data for displaying on a monitor screen the operator-controlled object and the terrain objects viewed from the viewpoint, wherein a terrain object is processed so as to be displayed as a show-through image generated by alternately displaying pixels indicative of the terrain object and pixels indicative of the operator-controlled object in a prescribed pattern through which the operator-controlled object can be viewed in the event that the overlap determination means determines that the operator-controlled object is located behind

the terrain object when viewed from the viewpoint, and wherein the terrain object is processed so as to be displayed as a non-show-through image in the event that both the operator-controlled object and the terrain object are viewed without a prescribed overlapping state from the viewpoint.

7. (Three Times Amended) A virtual image generation apparatus [as defined in claim 2,] which generates images observed from a viewpoint to be displayed on a monitor, the images including an operator-controlled object moving relative to virtual terrain objects, the operator-controlled object and the terrain objects being defined within a three-dimensional virtual space, the virtual generation apparatus comprising:

shape data memory which stores shape data defining shapes of the terrain objects present in the virtual space;

position specification means which specifies position of the operator-controlled object with respect to the terrain objects;

overlap determination means which determines, on the basis of the shape data and the position data, whether or not a terrain object is located between the viewpoint and the operator-controlled object; and

image generation means which generates image data for displaying on a monitor screen the operator-controlled object and the terrain objects viewed from the viewpoint, wherein a terrain object is processed so as to be displayed as a show-through image generated by displaying pixels indicative of the terrain object and pixels indicative of the operator-controlled object in [wherein the pattern is] a mesh form pattern with an alternating sequence of pixels for displaying the terrain object and pixels

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for displaying the operator-controlled object and through which the operator-controlled object can be viewed in the event that the overlap determination means determines that the operator-controlled object is located behind the terrain object when viewed from the viewpoint, and wherein the terrain object is processed so as to be displayed as a non-show-through image in the event that both the operator-controlled object and the terrain object are viewed without a prescribed overlapping state from the viewpoint.

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8. (Three Times Amended) A virtual image generation method which generates images observed from a viewpoint to be displayed on a monitor, the images including an operator-controlled object moving relative to virtual terrain objects, the operator-controlled object and the terrain objects being defined within a three-dimensional virtual space, the method comprising the steps of:

storing shape data defining shapes of the terrain objects;

computing the position of the operator-controlled object with respect to the terrain objects;

determining, on the basis of the shape data and the position data, for the operator-controlled object, whether a terrain object is located between the viewpoint and the operator-controlled object in an overlapping state when viewed from the viewpoint; and

generating image data for displaying on the monitor the operator-controlled object and the terrain objects viewed from the viewpoint, in which a terrain object in an overlapping state is processed so as to be displayed as a show-through image generated by alternately displaying pixels indicative of the terrain object and pixels indicative of the operator-controlled object in a prescribed pattern through which the operator controlled object can be viewed in the event that the terrain object is located between the viewpoint and the operator-controlled object in an overlapping state when viewed from the viewpoint, and in which a terrain object disposed in a state other than the overlapping state is displayed as a non-show-through image.

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9. (Three Times Amended) An information storing medium for use with a virtual image generation apparatus which generates images observed from a viewpoint to be displayed on a monitor, the images including an operator-controlled object moving relative to virtual terrain objects, the operator-controlled object and the terrain objects being defined within a three-dimensional virtual space, the information storing medium storing a program which executes the steps of:

supplying shape data defining shapes of objects to be displayed;

computing position of the operator-controlled object with respect to the terrain objects;

determining, on the basis of the shape data relating to the terrain objects present in the virtual space and the position data, for the operator-controlled object, whether any of the terrain objects is located between the viewpoint and the operator-controlled object in an overlapping state when viewed from the viewpoint; and

generating image data for displaying on the monitor the operator-controlled object and the terrain objects viewed from the viewpoint, in which any terrain object in an overlapping state is processed so as to be displayed as a show-through image generated by alternately displaying pixels indicative of the terrain object and pixels indicative of the operator-controlled object in a prescribed pattern through which the operator controlled object can be viewed in the event that the terrain object is located between the viewpoint and the operator-controlled object in an overlapping state when viewed from the viewpoint, and in which any of the terrain objects disposed in a state other than the overlapping state is displayed as a non-show-through image.

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13. (Three Times Amended) A game device which generates images observed from a viewpoint to be displayed on a monitor, the images including a player-controlled object moving relative to virtual terrain objects, the player-controlled object and the terrain objects being defined within a three-dimensional virtual space, the game device comprising:

an input means with which a game player operates a computer game;

shape data memory which stores shape data defining shapes of the terrain objects present in the virtual space;

a position data specifier which specifies a current position for the player-controlled object with respect to the terrain objects;

overlap determination means which determines, on the basis of the shape data and the position data, whether or not a terrain object is located between the viewpoint and the player-controlled object; and

an image generator which generates image data for displaying on the monitor screen the player-controlled object and the terrain objects viewed from the viewpoint wherein a terrain object is processed so as to be displayed as a show-through image generated by alternately displaying pixels indicative of the terrain object and pixels indicative of the operator-controlled object in a prescribed pattern through which the player-controlled object is viewed in the event that the overlap determiner determines that the player-controlled object is located behind the terrain object in an overlapping state when viewed from the viewpoint, and wherein a terrain object is displayed without such show-through image effect in the event that the player-controlled object and the terrain object are disposed in a state other than the overlapping state.

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25. (Twice Amended) A computer system comprising a graphic image processor wherein various objects are defined in a three-dimensional virtual space and programs are executed in response to an operator's instruction so that an operator-controlled object moves against a terrain composed of terrain objects defined in the three-dimensional virtual space and images of the operator controlled object and the terrain objects viewed from at least one viewpoint are generated for displaying on a monitor, the computer system comprising:

an input means which is manually controlled by an operator, the image of the operator-controlled object moves in response to the operators' control with the input means;

shape data memory stored with shape data for objects; and

processing means for generating images of the operator-controlled object and the terrain objects for displaying on the monitor,

wherein the processing means determines positions of the operator-controlled object with respect to the terrain objects and, in the event that a terrain object is located between the viewpoint and the operator-controlled object in the three-dimensional virtual space when viewed from the viewpoint, generates a portion of the terrain object overlapping with the operator-controlled object with a show-through image effect generated by alternately displaying pixels indicative of the terrain object and pixels indicative of the operator-controlled object in a prescribed pattern.

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28. (Twice Amended) A computer system defining various objects in a three-dimensional virtual space and executing programs that respond to an operator's instruction so that a operator-controlled object moves against a terrain composed of terrain objects defined in the three-dimensional virtual space and images of such objects viewed from a viewpoint are generated for displaying on a monitor, the computer system comprising:

an input means which is manually controlled by an operator, the image of the operator-controlled object moving in response to the operators' control with the input means; and

processing means for generating images of the operator-controlled object and the terrain objects for displaying on a monitor,

wherein the processing means determines positions of the operator-controlled object with respect to the terrain objects and, in the event that a terrain object is located between the viewpoint and the operator-controlled object in the three-dimensional virtual space when viewed from the viewpoint, generates a portion of the terrain object overlapping with the operator-controlled object with a show-through image effect generated by alternately displaying pixels indicative of the terrain object and pixels indicative of the operator-controlled object in a prescribed pattern.

29. (Twice Amended) A method of generating images on a computer system, the computer system defining objects in a three-dimensional virtual space, the objects including an operator-controlled object and a terrain composed of terrain objects, and wherein the computer system generates images of the objects viewed from a viewpoint for displaying on a monitor, the method comprising the steps of:

receiving signals from an input means controlled by an operator;

processing the signals so that operator-controlled object moves relative to their terrain objects in response to the signals;

determining the positions of the operator controlled object with respect to the terrain;

generating images of the operator-controlled object and the terrain objects viewed from the viewpoint for displaying on the monitor,

wherein, in the event that a terrain object is located between the viewpoint and the operator-controlled object in the three dimensional virtual space when viewed from the viewpoint, a portion of the terrain object overlapping with the operator controlled object is generated with a show-through effect generated by alternately displaying pixels indicative of the terrain object and pixels indicative of the operator-controlled object in a prescribed pattern.

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30. (Twice Amended) An information storing medium for use with a computer system defining objects in a three-dimensional virtual space, the objects including an operator-controlled object and a terrain composed of terrain objects, and wherein the computer system generates images of the objects viewed from a viewpoint for displaying on a monitor, the medium storing a program which executes the steps of:

receiving signals from an input means controlled by an operator;

processing the signals so that operator-controlled object moves relative to their terrain objects in response to the signals;

determining positions of the operator controlled object with respect to the terrain objects; and

generating images of the operator-controlled object and the terrain objects viewed from the viewpoint for displaying on the monitor,

wherein, in the event that a terrain object is located between the viewpoint and the operator-controlled object in the three dimensional virtual space when viewed from the viewpoint, a portion of the terrain object overlapping with the operator controlled object is generated with a show-through effect generated by alternately displaying pixels indicative of the terrain object and pixels indicative of the operator-controlled object in a prescribed pattern.

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31. (Once Amended) A virtual image generation apparatus comprising:
- shape data memory which stores data defining shapes of a plurality of terrain objects within a three-dimensional virtual space;
- position specification means which specifies a position of an operator-controlled object within the virtual space;
- overlap determination means which determines whether a terrain object is located between a viewpoint and the operator-controlled object;
- first image generation means which generates image data for the operator-controlled object and the plurality of terrain objects as viewed from the viewpoint; and
- second image generation means which generates image data for the operator-controlled object and the terrain objects comprising alternately generating pixels indicative of [the] at least one terrain object and [pixels] indicative of the operator-controlled object in a prescribed pattern if the overlap determination means determines that the operator-controlled object is located behind the at least one terrain object when viewed from the viewpoint.

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32. (Once Amended) A virtual image generation method comprising the steps of:

storing data defining shapes of a plurality of terrain objects within a three-dimensional virtual space;

computing the position of an operator-controlled object within the virtual space;

determining whether a terrain object is located between a viewpoint and the operator-controlled object; and

generating image data for the operator-controlled object and the plurality of terrain objects as viewed from the viewpoint;

wherein generating image data for the operator-controlled object and [the] at least one terrain object comprises alternately generating [comprising] pixels indicative of the at least one terrain object and [pixels] indicative of the operator-controlled object in a prescribed pattern if the operator-controlled object is located behind the at least one terrain object when viewed from the viewpoint.

33. (Once Amended) An information storing medium storing a program which executes the steps of:

storing data defining shapes of a plurality of terrain objects within a three-dimensional virtual space;

computing the position of an operator-controlled object within the virtual space;

determining whether a terrain object is located between a viewpoint and the operator-controlled object; and

generating image data for the operator-controlled object and the terrain objects as viewed from the viewpoint;

wherein generating image data for the operator-controlled object and [the] at least one terrain object [comprising] comprises alternately generating pixels indicative of the at least one terrain object and [pixels] indicative of the operator-controlled object in a prescribed pattern if the operator-controlled object is located behind the at least one terrain object when viewed from the viewpoint.

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34. (Once Amended) A computer system comprising:
an input means for operating an operator-controlled object;
first generating means for generating image data of the operator-controlled object and a plurality of terrain objects from a plurality of viewpoints,
processing means for determining the position of the operator-controlled object with respect to the plurality of terrain objects as viewed from a viewpoint; and[,]
second generating means for generating image data for the operator-controlled object and the terrain objects comprising alternately generating pixels indicative of [the] at least one terrain object and [pixels] indicative of the operator-controlled object in a prescribed pattern if the operator-controlled object is located behind [a] the at least one terrain object when viewed from the viewpoint.

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35. (Once Amended) A game device comprising:

a controller for operating a player-controlled object;

a shape data memory which stores data defining shapes of a plurality of terrain objects present in a three-dimensional virtual space;

a position data specifier which specifies a current position for the player-controlled object within the virtual space;

an overlap determination processor which determines whether a terrain object is located between a viewpoint and the player-controlled object; and

an image generator which generates image data for the player-controlled object and the terrain objects as viewed from the viewpoint and image data for the player-controlled object and the terrain object comprising alternately generating pixels indicative of [the] at least one terrain object and [pixels] indicative of the player-controlled object in a prescribed pattern if the overlap determination processor determines that the player-controlled object is located behind the at least one terrain object when viewed from the viewpoint.